MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

Permitting and Compliance Division Water Protection Bureau P.O. Box 200901, Helena, MT 59620-0901

Permit Fact Sheet Montana Ground Water Pollution Control System (MGWPCS)

Permittee: Barretts Minerals Inc.

8625 Highway 91 South

Dillon, MT 59725

Permit No.: MTX000094

Facility Name: Barretts Dillon Plant

Facility Location: 8625 Highway 91 South; Section 17, Township 8 South,

Range 9 West, Beaverhead County

Facility contact: Mr. John Parks, Environmental Health and Safety Manager

8625 Highway 91 South

Dillon, MT 59725 (406) 683-3336

Receiving Water: Class I Ground Water

Number of Outfalls: 1 (For Fee Determination only)

Outfall(s)/Type: 001 – Percolation Pond

Page 2 of 16 Permit No.: MTX000094

I.	PERMIT STATUS	3
II.	FACILITY INFORMATION	3
Α.	DESCRIPTION AND LOCATION OF FACILITY	3
В.	DESCRIPTION OF WASTEWATER AND SLUDGE TREATMENT OR CONTROLS	3
C.	DESCRIPTION OF DISCHARGE POINTS AND MIXING ZONE	
D.	EFFLUENT QUALITY	6
III.	RATIONALE FOR PROPOSED DISCHARGE LIMITS AND CONDITIONS	7
A.	SCOPE AND AUTHORITY	7
B.	WATER USE CLASSIFICATION & APPLICABLE WATER QUALITY STANDARDS	7
C.	PROPOSED EFFLUENT LIMITS	
D.	OTHER CONDITIONS	
E.	FINAL LIMITS	
IV.	RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS	10
Α.	EFFLUENT MONITORING	10
B.	GROUND WATER MONITORING	
٧.	SPECIAL CONDITIONS	12
VI.	NONSIGNIFICANT DETERMINATION	13
V 1.	HONOIGHI IOANI DETERMINATION	13
VII.	REFERENCES SITED	13
VIII.	ATTACHMENTS	14
ΛΤ٦	TACHMENT 1 – FLOW LINE DIAGRAM	
	TACHMENT 2 – FACILITY MAP	
IX.	PUBLIC PARTICIPATION	16

Fact Sheet Page 3 of 16

Permit No.: MTX000094

I. PERMIT STATUS

The Barretts Minerals, Inc. (BMI) Plant facility was issued its current Montana Ground Water Pollution Control System (MGWPCS) permit on January 31, 1995. The MGWPCS permit contained groundwater compliance limits for dissolved lead, dissolved copper, SO₄, TDS and pH. Barretts was required to monitor effluent, as well as monitoring wells 1, 4 and groundwater compliance monitoring well 5.

The MGWPCS permit was modified in September, 1996 and again in July 1997 to its current condition. The current permit contains ground water compliance limits for SO₄, CI, TDS and pH applicable at the boundary of the standard mixing zone as monitored at MW-7 quarterly.

BMI submitted a permit renewal application on December 13, 1999. BMI requested continuance of Outfall 001 and a source specific mixing zone. The permit expired on January 31, 2000 and was administratively extended pursuant to 75-5-401(2) until such time the permit was reissued. The renewal application was determined to be complete pursuant to ARM 17.30.1023 on March 13, 2001; however, the Department required (pursuant to ARM 17.30.506(1) and ARM 17.30.518(5)) additional technical data to analyze the proposed source specific MZ prior to proceeding with permit renewal. BMI rescinded its request for Source Specific MZ on June 9, 2006.

In addition to the MGWPCS permit BMI Dillon Plant facility maintains Montana Air Quality Permit #1995-14, Montana Air Quality Operating Permit #OP1995-04 and Operating Permit number 00009.

II. FACILITY INFORMATION

A. DESCRIPTION AND LOCATION OF FACILITY

The BMI Dillon Plant is located approximately 8 miles south of Dillon, MT on Interstate 15 adjacent to Beaverhead River. It is a talc milling and benefication facility, which acquires its ore from two local talc mines. Barretts mill supplies talc products to a gamut of industries that produce finished products ranging from medical supplies to paint and automotive parts. Talc ore is processed at the plant into powder, cakes and pellets via multiple types of crushing washing and purifying methods. In addition to the discharges to ground water described in this permit the facility also operates an 8.56 acre-feet wet tailing pond/water reclaim facility with an estimated capacity of 40 acrefeet. The tailing pond facility is not lined, discharges to ground water from the tailing facilities are regulated and monitored under Operating Permit number 00009.

B. DESCRIPTION OF WASTEWATER AND SLUDGE TREATMENT OR CONTROLS

The existing MGWPCS permit number MGWPCS0094 authorizes discharge of boiler blow-down and miscellaneous laboratory type wastewaters. The Boiler Water System has been upgraded significantly since the permit was issued on September 9, 1996. Attachment 1 provides a flow line schematic diagram for facility Boiler Water System and other water systems.

Fact Sheet Page 4 of 16

Permit No.: MTX000094

The source for the Boiler Water System is an on-site production well, which extracts local shallow groundwater. The source water is pumped from the well to a reverse osmosis (RO) treatment system where it undergoes dissolved solids reduction treatment via ion exclusion membranes. The RO treatment system is backed-up by the water softening system that was previous used for primary treatment.

RO treated water proceeds to a "product" holding tank. RO reject water proceeds to an "effluent" hold tank. Reject water from the effluent hold tank flows to the Benefication Plant as make-up water. The RO system is back-flushed approximately once per annual quarter. RO back-flush water discharges to the percolation pond (Outfall 001) via the floor sump.

RO treated water in the "product" hold tank proceeds to the air compressors and then to the blending tank. The RO water is also used in the Benefication plant and replaced the de-ionization water water treatment system. The water softeners are used primarily as a back-up treatment system in case the RO system needs to be taken off-line. Water from the softener flows to the blending tank.

From the blending tank, water is pumped to the heat exchanger where it is preheated to promote the energy efficiency of water going to the boiler and to provide a source of cooling for water coming from the boiler. From the heat exchanger water is conveyed to the de-aerator.

At the de-aerator a sodium sulfite based oxygen scavenger/metal passivator chemical is added to the system. The sodium sulfite scavenger provides chemical oxygen demand via an electron acceptor that is thermodynamically (chemical) preferable to the system plumbing materials.

After the de-aerator water is pumped to the boiler. There are two redundant pumps in parallel (east pump and west pump) in case one pump needs to be taken off-line for repair or replacement. While in route from the pumps to the boiler, the boiler water receives a second chemical addition consisting of a product primarily composed of caustic soda (NaOH) and ethylene-diamine tetra-acetic acid (EDTA-4NA). This product increases the functional life of internal boiler components.

Continuous boiler blow-down proceeds back to the heat exchanger then to benefication plant as make-up water, via the "effluent" hold tank; or, is discharge to the boiler room floor sump and subsequently to the Boiler Pond/Outfall 001. During normal operation the boiler is taken down once per shift.

All water that is conveyed to Outfall 001 is collected in a sump in the floor of the boiler room. In summary potential sources of wastewater discharged to Outfall 001 include;

- Boiler blow-down (amended with sodium sulfite oxygen scavenger, and caustic soda and ethylene-diamine tetra-acetic acid),
- RO system back-wash, and
- Wastewater from the on-site QA/QC product testing laboratory.

Fact Sheet Page 5 of 16

Permit No.: MTX000094

Of the sources listed in bullets above the RO back wash water have not been previously included as sources to this Outfall 001. The upgraded boiler water system accommodates recycling of boiler blow-down water as make-up water for the mill process circuits; therefore, the bulk of the water discharged to Outfall 001 during normal operations is the RO back-wash water. Settling occurs within the Outfall 001 boiler pond. The settled solids/sludge from the pond is removed periodically as needed, no set maintenance schedule is in place. All sludge material is disposed of within the tailings impoundment, which is permitted under the facilities operating permit (# 00009).

C. DESCRIPTION OF DISCHARGE POINTS AND MIXING ZONE

The Outfall 001 boiler pond has a design storage capacity of approximately 1.34 million gallons. Since installation of the RO system the pond typically stores 0.335 million gallons. The Outfall 001 boiler pond is located adjacent to, and within the Beaverhead River 100 year flood plain. The Beaverhead River has been documented to be losing along this reach throughout the year (MGWPCS File).

Wastewater from the Outfall 001 discharges to a shallow sand and gravel fluvial aquifer. Well logs from the facility indicate subsurface soils and aquifer matrix materials generally consist of coarse sandy gravel grading to coarse gravel and cobbles at approximately 20 - 30 feet below ground surface (BGS) (MGWPCS File).

Monitoring data (see Section II.D.) indicates static water levels at the site for the period of record (POR) from February 2000 to June 2006 have fluctuated from 9 feet to in excess of 20.5 feet BGS from season to season and year to year within different wells on-site. Static water fluctuation at the site generally increases from up to down gradient relative Outfall 001.

Based on potentiometric maps submitted by Barretts Minerals, Inc. for the four quarters within 2002 and data submitted in 2000 and 1992 the groundwater flow direction at the facility is roughly parallel to the Beaverhead River and fluctuates annually from approximately N 28° E to N 43° E (MGWPCS File) based on the available data. The submitted potentiometric maps did not include static water measurements of the stage of the Beaverhead River and the relative geometry of wells monitored is nearly linear; therefore, ground flow direction and gradient is largely uncharacterized at the site.

Groundwater flow gradient was estimated by the department to vary annually from 0.3% to 0.8% based on data submitted during 2002, 2000 and 1992 (MGWPCS File). Hydraulic conductivity across the site was calculated in 2000 using data from three wells and modified Jacob's equation. Hydraulic conductivities were estimated by the applicant to range from 60 ft/day to 469 ft/day with an average value of 288 ft/day (MGWPCS File).

Currently, the facility maintains a standard mixing zone (MZ). The MZ extends from the percolation pond 500 feet in the N 33° E direction. Monitoring well (MW) 7 is located in the vicinity of the MZ center line and is near the down gradient boundary. The MZ is authorized for water quality parameters including sulfate (SO₄), chloride (CI), total

Permit No.: MTX000094

dissolved solids (TDS) and pH. Based on past monitoring data from MW-7 (Table 1) and pursuant to ARM 17.30.505(1) and ARM 17.30.517(1)(c) the existing MZ will be reauthorized in this permit with its existing orientation and geometry for the individual parameters SO₄, CI, TDS and pH.

D. EFFLUENT QUALITY

The existing permit requires Barretts to monitor effluent at the Outfall 001 quarterly; and, monitor ground water up gradient of Outfall 001 at MW-1 and MW-4 quarterly. Table 1 summarizes effluent quality and ambient monitoring results representative of current operations (post installation of RO system), in the context of current permit limits. See Attachment 2 for monitoring well locations.

As indicated by the bolded text in Table 1 excursion from the ground water compliance limits at MW-7 for CI and TDS have been observed. These excursions occurred during 3rd and 4th quarter of 2004 for TDS and 4th quarter of 2004 for CI.

Table 1: Effluent and Compliance Monitoring Results for the POR from Third Quarter 2004
to Fourth Quarter 2006.

Parameter	Location	Units	Previous Permit Limit	Minimum Value	Maximum Value	Average Value	Number of Samples
Flow, Daily Average	Effluent	mgd	(4)	ND	ND	NA	0
	Effluent	mg/L	(3)	5	605	112	10
Chloride	MW-1	mg/L	(3)	12	14	12.5	10
Cinoride	MW-4	mg/L	(3)	10	14	12.8	5
	MW-7	mg/L	250 ⁽²⁾	11	388	73.6	7
	Effluent	s.u.	(3)	7.7	9.8	8.7	10
	MW-1	s.u.	(3)	7.3	7.7	7.5	10
рН	MW-4	s.u.	(3)	7.5	7.9	7.6	5
	MW-7	s.u.	6.5-8.5 ⁽²⁾	7.5	7.8	7.6	7
	Effluent	mg/L	(3)	134	1310	406	10
Total Dissolved Solids	MW-1	mg/L	(3)	411	467	432	10
Total Dissolved Solids	MW-4	mg/L	(3)	360	451	409	5
	MW-7	mg/L	500 ⁽²⁾	349	1010	502	7
	Effluent	mg/L	(3)	33	154	67	10
Sulfate	MW-1	mg/L	(3)	111	138	127	10
Bunate	MW-4	mg/L	(3)	88	128	113	5
	MW-7	mg/L	250 ⁽²⁾	89	153	117	7

Footnotes:

- (1) Conventional and nonconventional pollutants only, table does not include toxics.
- (2) Ground water compliance limit, no sample from MW-7 shall exceed or be outside the specified range.
- (3) No limit in previous permit; monitoring only requirement.
- (4) No monitoring or effluent limit in previous permit.

Fact Sheet Page 7 of 16

Permit No.: MTX000094

The excursion observed in MW-7 (at the end of the GW mixing zone) occurred during the first two quarters after installation of the boiler water system upgrades and are likely artifacts and/or residuals of larger concentrations discharged prior to installation of the upgraded water management system. Ultimately, these observed concentrations are most likely an expression of the ground water transport time from Outfall 001 to MW-7 and are an artifact of plume/ground water transport and freshening mechanics.

III. RATIONALE FOR PROPOSED DISCHARGE LIMITS AND CONDITIONS

This section develops and presents the basis for discharge limitations in accordance with the requirements at ARM 17.30.1031(3).

A. SCOPE AND AUTHORITY

The Montana Water Quality Act (Act) states that it is unlawful to discharge sewage, industrial wastes, or other wastes into any state water without a current permit from the department (75-5-605(2), MCA). The Act also establishes that rules shall be adopted governing the application, authorization and issuance of permits to discharge sewage, industrial wastes, or other wastes to state waters; provided the limitations of said permits will not result in pollution of any state water (75-5-401(1) and (2), MCA). ARM 17.30.1031 states that all issued MGWPCS permits must contain conditions including, but not limited to discharge limitations, which will assure compliance with the ground water quality standards, given due consideration to the economics of waste treatment and prevention. ARM 17.30.1005(1) states that the standards at ARM 17.30.1006 establish the maximum allowable changes in ground water quality and are the basis for limiting discharges to ground water.

B. WATER USE CLASSIFICATION & APPLICABLE WATER QUALITY STANDARDS

This section identifies the lowest applicable water quality standards based on receiving ground water classification for individual parameters of concern (POC) known to exist within the effluent.

ARM 17.30.1006 states that Class I ground waters are those ground waters with a natural specific conductance that is less than or equal to 1,000 microSiemens/cm at 25 °C. No conductance data was available for the receiving water; however, conductance of the receiving water can be estimated based on TDS data from MW-1 using equation 1 (USGS 2254, 1989).

KA = S (Equation 1)

K is specific conductance in microSiemens/cm, S is TDS, and A is a multiplication constant that ranges within fresh waters from 0.55 to 0.75. Using equation 1, the average TDS data from up gradient MW-1 (432 mg/L) and the range given for constant A the department estimates the specific conductivity of the receiving aquifer to range from 576 to 785 microSiemens/cm. Based on this estimate of specific conductance the shallow gravel alluvial aquifer receiving water is Class I ground water.

Fact Sheet Page 8 of 16

Permit No.: MTX000094

The quality of Class I ground water must be maintained so that these waters are suitable for the following beneficial uses with little or no treatment (ARM 17.30.1006(1)(a)).

- Public and private water supplies,
- Culinary and food processing purposes,
- Irrigation,
- Drinking water for livestock and wildlife, and
- Commercial and industrial purposes.

In order to maintain these beneficial uses a person may not cause a violation of any of the following specific water standards listed below, except as authorized by an MZ (ARM 17.30.1006(1)(b)).

- The human health standards listed in department Circular DEQ-7 (2006),
- General water quality requisite to support designated beneficial uses listed above, and/or
- The State's nondegradation policy at 75-5-303, MCA.

Additionally, Montana's nondegradation policy applies to any activity of man that results in a new or increased source which may cause degradation (ARM 17.30.705(1)). However, the proposed discharge is not a new or increase source pursuant to ARM 17.30.702(18), because an increase in the quantity of pollutants has not been proposed. On the contrary the boiler water system upgrades are expected to decrease the over-all pollutant loading rate.

Based on previous monitoring data the boiler water is known to contain elevated levels of TDS, SO₄, pH and Cl. Additionally, chemical additions are made to the boiler water that will elevate the levels of sodium (Na), nitrilotriacetic acid, and trisodium salt (NTA-3NA). RO system backwash water will contain elevated dissolved solids including metals and other parameters treatable by this technology. Finally, wastewater from the on-site QA/QC lab will contain various spent laboratory reagents and other miscellaneous parameters that have not been fully identified at this time.

Both of the boiler water conditioning products contains significant proportions of Na. Na is not listed in DEQ-7 nor has it been assigned a SMCL. However, increased levels in Na influence a water sodium adsorption ratio (SAR), which may limit irrigation beneficial uses in certain types of sensitive soils. The department has not published numeric limits for SAR in ground water and of the 36 soil types identified within a 3 mile radius of the discharge point, one sensitive soils was identified (i.e. SAR >13) (USDA, NRCS, 2006). The "Neen" soil type has an SAR ranging from 13-30 and comprises 123 acres within the search area.

The quality and specific chemistry of the laboratory wastewater and RO back flush water have not been characterized to date. These sources will likely contain elevated levels of TDS, metals, and other potential miscellaneous pollutants.

Fact Sheet Page 9 of 16

Permit No.: MTX000094

Numeric standards for TDS, pH, CI or SO_4 are not listed in DEQ-7 (2006). Ground water quality standards at ARM 17.30.1006 state that no increase of a parameter to a level that renders the waters harmful, detrimental or injurious to the beneficial uses listed for Class I water (ARM 17.30.1006(1)(a)(ii)) are allowed. ARM 17.30.1006(1)(a)(ii) also states that the department may use any pertinent credible information to determine the levels that renders the waters harmful, detrimental or injurious to the beneficial uses.

The most sensitive beneficial use for Class I ground water is drinking water supply. 40 CFR 143.3 lists TDS, pH, Cl or SO₄ as having 500 mg/L, a range from 6.5 -8.5 s.u., 250 mg/L and 250 mg/L secondary maximum contaminant levels (SMCLs), respectively. These SMCLs represent "reasonable goals for drinking water quality" (40 CFR 143.3). Therefore, pursuant to ARM 17.30.1006(1)(a)(ii), the department has determined that discharge of effluent, such that the resultant concentration in the receiving water at the end of the standard MZ that does not exceed the SMCLs, does not limit potential beneficial uses. Thus, discharge that results in an excursion from the SMCLs within MW-7 does not comply with the lowest applicable standard.

C. PROPOSED EFFLUENT LIMITS

This section develops proposed limits for each individual POC based on the lowest applicable standards discussed in Section III.B. (75-5-401(2), MCA; ARM 17.30.1031(1) & (3); ARM17.30.1005(1) & (2); and, ARM 17.30.1006(1) (a) & (b)).

Wastewater flow volumes to Outfall 001 have not been quantified. Hence, development of mass balance based effluent limits for POC pursuant to the lowest applicable ground water quality standards at the end of the mixing zone is not possible for this permit. Therefore, the Department is not proposing effluent limits at the point of discharge. The permittee is required to monitor effluent volume, effluent quality and ground water quality at the end of the MZ to ensure compliance with the applicable groundwater standards.

D. OTHER CONDITIONS

The occurrence and duration of reverse osmosis water treatment system back flush maintenance events shall be documented and records maintained in accordance with conditions stipulated in Section III. H. of the permit.

E. FINAL LIMITS

Based on the information and analysis presented in Section III. B. and C. and pursuant to 75-5-402(3), ARM 17.30.1031(2) and ARM 17.30.1005(2) the department proposes a limit such that the discharge from Outfall 001 shall not cause an excursion from the standards listed in Table 2 at the end of the department authorized standard MZ.

Fact Sheet Page 10 of 16

Permit No.: MTX000094

Table 2. Proposed Ground Water Compliance Limits at MW-7.					
Parameter	Units	Instantaneous Limit ⁽¹⁾			
Total Dissolved Solids	mg/L	500			
Chloride	mg/L	250			
Sulfate	mg/L	250			
рН	s.u.	6.5-8.5			
Footnotes:					
1. No sample or measurement shall exceed the listed value or be outside the specified range.					

IV. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

Pursuant to 75-5-602, MCA and in accordance with ARM 17.30.1031(5) the permit requires effluent and groundwater monitoring. This section provides the basis for, and specifies monitoring and reporting requirements.

A. EFFLUENT MONITORING

The department assumes that discharged waters within the Outfall 001 boiler pond are mixed; however may remain stratified to some degree. Therefore, bulk pond samples from within 18 inches of the pond bottom are required instead of samples acquired from the pipe discharging to Outfall 001. It is believed sampling in this manner will be more representative of effluent quality infiltrating to ground water than a bulk pond sample at any point in time. Additionally, information gathered at the facility during the December 15, 2004 site inspection indicated that RO back flush maintenance and discharge to the pond would likely occur on a quarterly basis. However, at that time the RO system was newly implemented and maintenance schedules had not been fully developed and established. The facility is required to conduct regularly scheduled monitoring and sampling at minimum on a quarterly frequency and within 7 days after RO back flush maintenance events. If back flush maintenance does not occur during the entire quarterly monitoring and reporting period, a minimum of one monitoring and sampling event shall occur at the end of the monitoring and reporting period.

Samples taken from the pond shall be collected within 18 inches of the pond bottom. This can be accomplished using designated tubing that extends to the appropriate depth of the pond from a sampling dock. A vacuum source (i.e. peristaltic pump or other similar apparatus) can be applied to the tube to draw water up and into the sample container. Methodology similar to "low flow" (EPA, 1996) sampling methods are recommended to minimize sample turbidity.

As discussed in Section III. C. flow monitoring is required such that this data may be used in the future to develop permit limits, if necessary. Similarly SAR monitoring will be required to determine if it is a POC due to the existing irrigation ditch located directly adjacent to and between the boiler pond and the Beaverhead River. Also due to the uncharacterized nature of effluent from the RO backwash, the laboratory wastewater, and the spent DI regeneration solution(s), the facility is required to conduct one toxicity characterization leaching procedure (TCLP) for metals test screen. In addition to TCLP

Permit No.: MTX000094

metals the facility is also required to conduct a TCLP test screen for Volatile Organic Compounds (VOC) due to the uncharacterized nature of the discharged laboratory wastewater. TCLP test screening on the effluent shall be conducted annually during calendar years 2007 and 2011 to confirm the effluent does not contain toxic and/or hazardous properties that could potentially limit beneficial uses. Table 3 presents effluent monitoring requirements for Outfall 001.

Table 3. Outfall 001 Monitoring Requirements.				
Parameter (units)	Frequency	Sample Type		
Flow (gpm) ⁽¹⁾	Continuous	Totalized		
Total Dissolved Solids (mg/L) ⁽²⁾	Quarterly	Grab		
Chloride (mg/L) (2)	Quarterly	Grab		
Sulfate (mg/L) (2)	Quarterly	Grab		
pH (s.u.) (2)	Quarterly	Instantaneous		
Toxicity Characteristic Leaching Procedure – Metals and VOC ⁽²⁾	Annually ⁽³⁾	Grab		
Sodium Adsorption Ratio ⁽²⁾	Quarterly	Grab		

Footnotes:

- 1. Outfall 001/boiler blowdown percolation pond cumulative influent from all contributing sources shall be monitored at the frequency and with type of measurement specified.
- 2. Grab samples and other instantaneous measurement shall be taken from within 18 inches of the bottom of the percolation pond.
- 3. TCLP metals and VOC screening analysis is required annually during calendar year 2007 and 2011.

B. GROUND WATER MONITORING

To demonstrate and ensure compliance with applicable water quality standards at the end of the standard MZ, the permittee is required to monitor ground water within MW-1 and MW-7 at the frequency and with the type of sample listed in Table 4 (see Attachment 2).

Table 4. Ground Water Compliance Monitoring Requirements at MW-1 and MW-7.				
Parameter (units)	Frequency	Sample Type		
Static Water Level (ft-msl ⁽¹⁾)	Quarterly	Instantaneous		
Total Dissolved Solids (mg/L)	Quarterly	Grab		
Chloride (mg/L)	Quarterly	Grab		
Sulfate (mg/L)	Quarterly	Grab		
pH (s.u.)	Quarterly	Instantaneous		
Sodium Adsorption Ratio	Quarterly	Grab		
_				

Footnotes:

^{1.} Static water level shall be reported as feet mean sea level or feet elevation relative to a permanent benchmark or control point at facility.

Fact Sheet Page 12 of 16

Permit No.: MTX000094

V. SPECIAL CONDITIONS

In accordance with the authority at ARM 17.30.505(1)(f) and to satisfy the requirements at ARM 17.30.517(1)(c), the permittee shall to conduct further hydrogeologic characterization the variable nature of the ground water flow direction and gradient at the facility (discussed in Section II.C.). Within 120 days of the effective date of the permit the permittee shall submit to the Department for review and comment a plan and schedule for the assessment of the hydrogeology at the Barretts Minerals Dillon Plant site. If the Department requires substantial modifications to the plan and schedule, a revised plan shall be submitted to the Department within 60 days of permittee receipt of Department comments. The plan shall include, but is not limited to, the following:

- Identification of the locations, design, and development of monitoring wells or other monitoring stations to be implemented in order to delineate the spatial and temporal variability in ground water occurrence, depth, flow direction and gradient relative to the Beaverhead River and the wet tailing facility at Dillon Mill site.
- The permittee shall demonstrate access to the proposed monitoring stations locations for the life of the facility. All ground water wells or surface water monitoring stations shall be located to allow sampling to be conducted year round and shall be approved by the Department prior to installation.
- The plan shall identify upgradient wells and/or surface water monitoring stations to be used that are outside of influence of impacted groundwater from the Boiler Pond/Outfall 001 discharge and the wet tailing facility.
- Assessment of the hydrogeology at the immediate area of the Barretts Mineral Dillon Plant site. This assessment shall include, but is not limited to, the following:
 - 1. A physical hydrogeologic characterization of the aquifer beneath Dillon Mill site.
 - 2. A description of the lithology, Hydraulic Conductivity (K), Transmissivity (T), Storativity (S), and the thickness and extent of the shallowest aquifer.
 - 3. Determine the depth to ground water; groundwater flow direction and gradient; identify groundwater divides, losing and/or gaining reaches of the Beaverhead River and existing irrigation ditch (hydraulic connectivity with surface water); and document potential seasonal fluctuations in ground water flow regimen.
- The plan shall provide protocols and procedures for routine ground water monitoring for the duration of this permit cycle. The plan shall include, but not limited to:
 - 1. Objectives (including QA/QC).
 - 2. Monitoring locations and frequencies.
 - 3. Monitoring supplies and equipment.
 - 4. Field methods.

Fact Sheet Page 13 of 16

Permit No.: MTX000094

The plan shall provide a proposed summary reporting content and schedule for results of the study requirement listed herein.

VI. NONSIGNIFICANT DETERMINATION

The Department has determined that the discharge does not constitute a new or increased source and is not subject to Montana Nondegradation Policy (75-5-303, MCA; ARM 17.30.702(18)).

VII. REFERENCES SITED

Administrative Rules of Montana, September 1999 Title 17, Chapter 30, Sub-chapter 5 – *Mixing Zones in Surface and Ground Water*.

Administrative Rules of Montana, March 2000, Title 17, Chapter 30, Sub-chapter 7 – *Nondegradation of Water Quality*.

Administrative Rules of Montana, March 2002, Title 17, Chapter 30, Sub-chapter 10 – *Montana Ground Water Pollution Control System* (MGWPCS).

Circular DEQ-7, Montana Numeric Water Quality Standards, February 2006.

EPA/540/S-95/504, Ground Water Issue; Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures, 1996.

Montana Code Annotated, Title 75, Chapter 5, Montana Water Quality Act, 2003.

MGWPCS File, Permit # MTX000094 Administrative Record, *Barretts Minerals – Dillon*. United States Department of Agriculture, Natural Resources Conservation Service, *Soil Data Mart*, http://soildatamart.nrcs.usda.gov/.

United States Geologic Survey Water Supply Paper 2254, Study and Interpretation of the Chemical Characteristics of Natural Waters (third edition), Hem, John D., 1989.

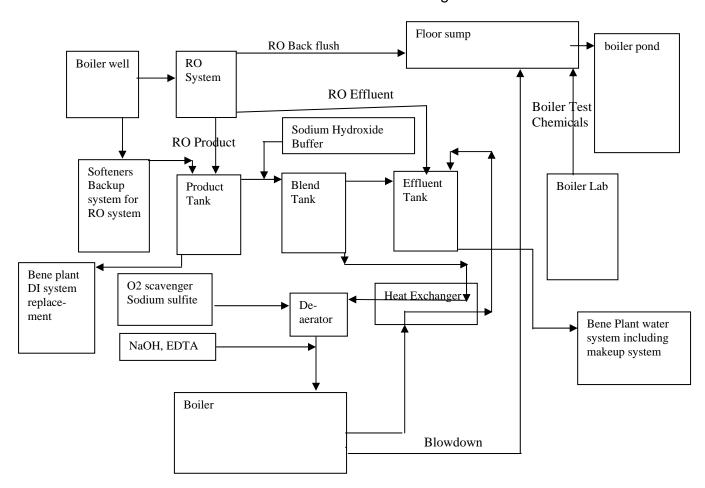
Prepared by P. Skubinna, March 21, 2007

Fact Sheet Page 14 of 16

Permit No.: MTX000094

VIII. ATTACHMENTS

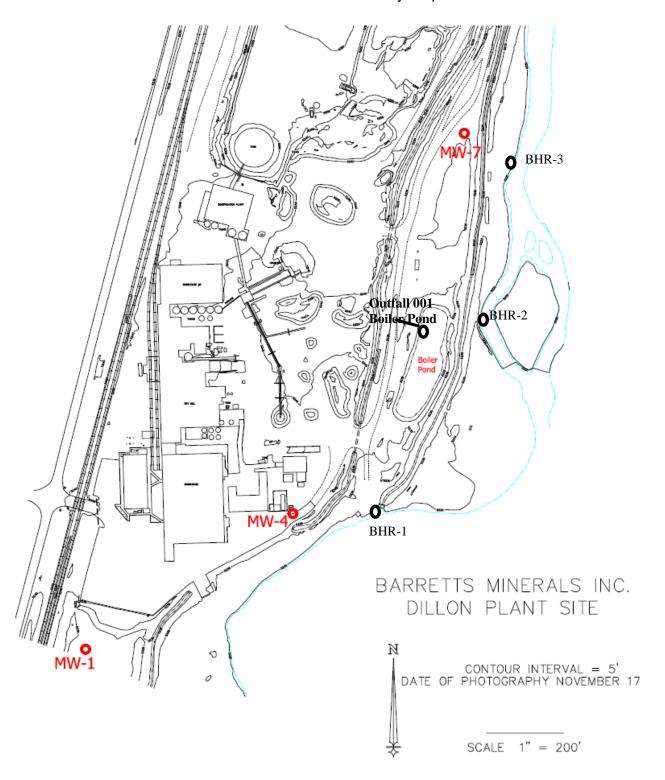
Attachment 1 – Flow Line Diagram



Fact Sheet Page 15 of 16

Permit No.: MTX000094

Attachment 2 – Facility Map



Fact Sheet Page 16 of 16

Permit No.: MTX000094

IX. PUBLIC PARTICIPATION

This Fact Sheet, the Draft MGWPCS Permit, and Draft Environmental Assessment were posted for public comment from June 18, 2007 to July 17, 2007 during public notice number MT-07-10.